

What is claimed is:

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1. A process for making a thin film heterojunction photovoltaic device comprising the steps of:
 - (a) depositing a first film of p-type copper indium diselenide film on a metal back contact;
 - (b) depositing on the upper surface of the copper indium diselenide film a group II(a,b) and VII elemental salt;
 - (c) converting the p-type the upper copper indium diselenide film surface n-type by thermal diffusion of the salt into the copper indium diselenide film;
 - (d) depositing a second thin film layer of high resistivity zinc oxide; and
 - (e) depositing a third film of n-type transparent zinc oxide on the second thin film high resistivity zinc oxide layer.
 2. A process according to claim 1 in which the group II(a,b) and VII elemental salt is zinc chloride.
 3. A process according to claim 2 wherein zinc chloride is deposited on the copper indium diselenide film surface from solid zinc chloride in a vapor phase through sublimation.
 4. A process according to claim 2 wherein zinc chloride is deposited on the copper indium diselenide film surface from a zinc chloride solution by chemical vapor deposition.
 5. A process according to claim 4 wherein the zinc chloride solution comprises zinc chloride in methanol.
 6. A process according to claim 1 wherein the ¹group IIb halide ~~elemental salt~~ and copper indium diselenide are thermally diffused at 190-220°C. -mc / 3/99
 7. A process according to claim 1 wherein the ¹group IIb halide ~~elemental salt~~ and copper indium diselenide are heated in contact for 10-60 minutes.
 8. A process according to claim 1 further comprising cleaning the n-type converted copper indium diselenide film surface with deionized water and etching with dilute hydrochloric acid.
 9. A process according to claim 8 wherein the hydrochloric acid solution is 10% hydrochloric acid in water.
 10. A thin film photovoltaic device comprising, in order, a first layer of p-type copper indium diselenide semiconductor having a type converted upper region rendered n-type by thermal diffusion of a group II(a,b) and VII elemental salt, a second layer of high resistivity zinc oxide

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